2016

Overview of the Endangered Species Program

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Published in Perry, M. C. , ed., The History of Patuxent –America's Wildlife Research Story (2016)
U. S. Geological Survey Circular 1422, 255 p. https://doi.org/10.3133/cir1422

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In the late 1950s and early 1960s, we became increasingly aware, as a Nation, of declining populations of birds and mammals. Rates of extinction appeared to be skyrocketing and the situation was becoming critical. The country needed to take action to reverse this trend.

The Federal government began to show interest in the problem and acknowledged that it needed to intervene on a hands-on basis. The Washington, D.C., office of the U.S. Fish and Wildlife Service (USFWS) began to promote a program, championed by Dr. Ray Erickson, senior scientist at headquarters, to initiate captive research and propagation of birds and mammals. Research was needed to stabilize and recover populations in the wild. In order to save endangered species, the need was not only to raise birds and mammals in captivity but also to release them into the wild to augment populations.

Dr. Erickson envisioned a three-pronged program: a section of laboratory investigations; a section of propagation, whereby Patuxent Wildlife Research Center (Patuxent) in Laurel, MD, would maintain captive populations of animals; and the field stations where field biologists would study the populations in the wild to determine what actions needed to be taken to reverse the downward trends.

Gene Knoder, a biologist with the USFWS stationed in Monte Vista Refuge in Colorado, began working with a captive population of sandhill cranes (*Grus canadensis*). Ray envisioned that they could be raised at Patuxent because we needed to work with a closely related or surrogate species whose population was much more abundant than that of the endangered whooping crane (*Grus americana*). Because most of these endangered species had rarely or never been bred in captivity, Patuxent researchers used the surrogates to develop techniques that were likely to be successful in the wild rather than to risk working directly with the endangered species.

The whooping crane was a rare species at that time in the mid-1960s, and, to the best of our knowledge, its population had been reduced to about 14 or 15 birds, although the exact number was disputed. Most of these birds wintered along the Gulf Coast of Texas and migrated to an unknown part of northern Alberta, Canada. In the early 1950s, a biologist returning from a forest fire saw a whooping crane with one offspring on the ground in Wood Buffalo National Park, which extends from northern Alberta into the Northwest Territories.

Through a cooperative effort with the Canadian Wildlife Service, the USFWS developed a program whereby we would remove one egg from each two-egg clutch and bring it into captivity, where the chicks could be hatched and reared; in this way, we could develop a captive breeding population.

The Endangered Species research team at its peak in early 1980s, at Snowden Hall, Patuxent Wildlife Research Center, Laurel, MD, 1980 (left to right, 1st row: Ray Erickson, Randy Perry, Paul Sykes, Mike Scott, John Serafin; 2nd row: Glen Smart, John Sincock, Noel Snyder, Sandy Wilbur; 3rd row: Jim Jacobi, Dave Mech, Dave Ellis, Scott Derrickson; 4th row: Barbara Nichols, Jim Carpenter, Cam Kepler; 5th row: Sharon Fox, Jim Wiley, Conrad Hillman; not present: George Gee, Gene Cowan). Photo by Paul Sykes, U.S. Fish and Wildlife Service.

Cranes commonly lay two eggs but, because of sibling rivalry and food availability, typically only a single chick is reared. Therefore, we were salvaging the egg that would theoretically be lost to sibling aggression or starvation.

Beginning in 1967, Ray and I traveled to Wood Buffalo National Park, near Fort Chipewyan, Alberta, to meet with Canadian Wildlife Service biologist Ernie Kuyt. He was a

Glen Smart (U.S. Fish and Wildlife Service), Ernie Kuyt (Canadian Wildlife Service), and Ray Erickson (U.S. Fish and Wildlife Service) with eggs, 1967. Photo by U.S. Fish and Wildlife Service.

delight to be around, and his knowledge of the area and his cooperative nature made him a valuable partner. Because only Ernie was authorized to leave the helicopter once we landed at a nest, it was his responsibility to collect the egg.

Before we could enter the park, of course, we had to have permits. Ray and I were issued permits to enter Wood Buffalo National Park, retrieve the eggs, and bring them out. The nesting area is about 80 percent water, consisting mostly of small, very shallow ponds. Most of them did not contain fish, as the ponds froze solid every winter. Many invertebrates did inhabit the ponds, however, and in this general area the cranes would nest and raise their young. The birds were typically very reluctant to leave the nest as Ernie neared them. On occasion, they even challenged the helicopter, which in itself was quite exciting.

We had developed a 1-cubic-foot case made of Styrofoam with a cavity in the middle into which an egg could be placed. The plan was for Ernie to put the egg in this Styrofoam case and carry it out of the park. If he dropped the case, then, optimistically, the egg would not break or be damaged. Ernie looked at the case and said, "There's no way that I'm going to carry that thing back and forth." From then on, every egg that was collected from a nest at Wood Buffalo National Park was carried out in Ernie's old woolen sock! As far as I know, every egg that ever came out of Wood Buffalo National Park got a ride in Ernie's woolen sock, and, to my knowledge, he never dropped an egg. He would go out, examine the nest, photograph the nest, select the egg that he felt was less liable to hatch, collect the egg, and make his way back to the helicopter, where he would relinquish the egg to us. Ray and I maintained them in a portable incubator that we had brought with us.

Glen Smart and Ray Erickson (U.S. Fish and Wildlife Service) monitoring crane eggs, 1967. Photo by U.S. Fish and Wildlife Service.

In the first year (1967), we were going to be flown back to Maryland in an executive jet by the Canadian Wildlife Service, or by the Canadian Air Force. However, that was the year of the Six-Day War in the Middle East. U Thant, the Secretary General of the United Nations, took our plane that year, and we had to come back on a commercial flight. Thereafter, we returned in first-class accommodations with an executive jet each year.

The feather development of each chick was closely monitored at Patuxent. By November or December, a chick has molted its feathers from the mid-neck down through most of the body, but it still has a brown neck and brown wings, which are indicative of that time of the year. The birds have a continuous molt, so they continue to molt throughout the winter. By the time they fly north in the spring, the birds are completely white except for the brown head.

Another species we worked with in the 1960s was a small race of Canada goose (*Branta canadensis*) that breeds only in the Aleutian Islands off the coast of Alaska. At that time, they were called the Aleutian goose (*Branta hutchinsii leucopareia*). Their population had declined to such an extreme point that we thought they were extinct. This belief changed, however, when a refuge manager, Bob Jones (USFWS), made one of his lengthy trips into the outer Aleutians in an open dory. He was on Buldir Island, which is a relatively small pinnacle of rock about 5 × 8 miles in size, with very precipitous cliffs. He found a population of about 100 to 150 Aleutian geese breeding there.

Ray Erickson (U.S. Fish and Wildlife Service) and chick. Photo from the newspaper "Laurel Leader." Reprinted with permission from The Baltimore Sun. All rights reserved.

The Aleutian geese originally were quite common throughout the Aleutians. With the interest in fur coats and other fur clothing, the arctic fox (*Alopex lagopus*) furs were very valuable and desirable. The Russians fur trappers brought foxes to many of these islands, and subsequently the foxes reproduced. The trappers would come back at the appropriate times and harvest the foxes for furs—it was almost a captive fur-animal population. This population of foxes was extremely detrimental to the ground-nesting species of birds and other animals there. The Aleutian Canada goose was one of the most obvious of the birds and it was one of the first to disappear because of predation by the foxes. Fortunately for the birds, no foxes were brought to Buldir Island because of its precipitous cliffs; fortunately for us, one small area on the northern side of Buldir Island is relatively flat, allowing us access to the island. We traveled to the island and went ashore in late spring. We collected approximately 22 goslings that were newly hatched and brought them back to Patuxent to be part of our breeding population.

Aleutian Canada geese nest similarly to the other Canada geese. We raised many of these birds, but the problem then was how to release them back into the wild. In the 1960s, the Aleutian Islands National Wildlife Refuge staff was actively destroying the foxes on various islands. As an island would be cleared of foxes, we would transport some of these captive-reared geese to the island and release them, hoping that they would disperse and repopulate the island. Unfortunately, although the foxes were gone, there were still many bald eagles (*Haliaeetus leucocephalus*) remaining. Because eagles are fond of geese as a dinner item, that plan was less than successful.

We tried several alternatives. One solution that worked well, once the islands were cleared of foxes, was to go out to Buldir Island, capture an adult and the goslings that were with that adult, transport them to another island, and release them as a family unit. They would then mature, reproduce,

Crane flock manager Bruce Williams, U.S. Fish and Wildife Service, with young whooping crane, 1986. Photo by Matthew C. Perry, U.S. Fish and Wildlife Service.

and eventually repopulate the island. Although this population was only about 100 to 150 geese when discovered by USFWS biologist Bob Jones, it now has skyrocketed to the more than 200,000 Aleutian Canada geese that are alive today (2016).

The Laboratory Investigations Program at Patuxent consisted of professionals in selected areas of expertise. These included many of the first people Ray hired, including a nutritionist, a physiologist, and a veterinarian to care for the birds in captivity and to cater to their every need. The field portion of the program was staffed originally with six biologists. Patuxent biologist Roy Tomlinson went to Arizona to study the masked bobwhite quail (*Colinus virginianus ridgwayi*), which is a desert form of bobwhite (*Colinus virginianus*) that was nearly destroyed. The remaining population was found mostly in Sonora, Mexico, with additional birds occupying a few valleys that extend into southern Arizona.

When cattle herds from Mexico were driven north to Tucson to the railheads, they destroyed most of the fragile grasslands, which are slow to recover. As a result, over time the habitats of the masked bobwhite quail in the United States were destroyed.

Roy conducted most of his work in Sonora. He developed a technique by which he would go into the desert and find a cactus wren (*Campylorhynchus brunneicapillus*) nest that he knew would be lined with feathers that the wrens obtain from the desert floor. Roy would examine the nest and identify bird species from the feathers that he found. If he found bobwhite quail feathers, of course, he would assume they were indicative of the presence of bobwhites in the area.

I went with him when we received the first bobwhites from two brothers in Tucson, Jim and Seymour Levy. They had been studying the birds on their own, and had a few birds in captivity. They let us have three or four pairs. We brought them to Patuxent and attempted to breed them. We were successful and got a number of eggs. The birds' fertility was quite low, however; the chicks were weak and so inbred that production was practically nil. Therefore, we needed to obtain some new birds to bolster that breeding population.

I went to northern Mexico with Roy; we trapped about 20 birds and brought them back to Patuxent. They proved easy to breed; we could literally breed them by the hundreds. We had no idea how to release them, however, so we began by simply placing them in a pen. We allowed them to remain there for a few days, where we fed and cared for them, and then we opened the door and let them walk out. This plan, unfortunately, was not successful because of the many hawks and other predators in the area. The bobwhites were quite uneducated in the ways of the wild, and, as a result, suffered substantial mortality.

Next, we paired neutering females from a captive Texas bobwhite quail population with male masked bobwhites so they would not hybridize. As chicks hatched in the incubator, we would put 12 to 15 with one of these pairs, take them to the desert, and release them. Again, results were similar to those of the earlier releases, but with one exception: the mesh on the pens was large enough that the babies could get out and begin to forage a little on their own, but the parents would always call them back. We would keep them there for a week or so, until they became familiar with the area, and then release them. We did build a stable population for a while but, because of the inadequate habitat, I do not think that population has been very successful. I believe there are still a few quail in Arizona and a few in Sonora.

The California condor (*Gymnogyps californianus*) population was 12 or 13 birds, and the appropriate course of action regarding the species was a very controversial subject in the area of their native habitat. One faction of biologists felt very strongly that we should leave the birds alone to die in dignity,

Andean condor pair in captive breeding pen at Patuxent Wildlife Research Center, Laurel, MD. Photo by Matthew C. Perry, U.S. Fish and Wildlife Service.

Andean condors with backpack transmitters, Patuxent Wildlife Research Center, Laurel, MD. Photo by Noel F.R. Snyder, U.S. Fish and Wildlife Service.

and not bring them into captivity, where they would be no longer condors at all, but similar to captive chickens. The other faction felt that, in order to save them, we needed to bring all condors into captivity, breed them, and eventually release them back into the wild.

When the population began to decline precipitously, the State of California indicated that Patuxent could catch all of the birds and bring them into captivity. However, no California condors were allowed to leave the State of California. Unfortunately, then, we were not able to bring them back to Patuxent.

However, we were able to reach a compromise with the San Diego Zoo and the Los Angeles Zoo. The zoos built facilities that were off exhibit to the public and began to raise California condors. At Patuxent, we were studying the closely related Andean condor (*Vultur gryphus*). We found that by removing eggs as they were laid, we could obtain multiple clutches in a given year (a clutch being one egg in condors). Typically, we would get three or four eggs from a female, but I believe we once got as many as nine. By removing eggs, we could greatly increase the productivity of a given condor pair. Snyder (2016) discusses the details of this negotiation on the fate of the condors in depth.

The black-footed ferret (*Mustela nigripes*) was another animal we studied at Patuxent, but we had little success with it. Because of other priorities, we reduced the effort we were investing in this program, and it was eventually taken over by a consortium of State wildlife agencies and zoos with the guidance of the USFWS. Thousands of captive-raised black-footed ferrets have been released in eight western states, and also in parts of Canada and Mexico (National Black-Footed Ferret Conservation Center, n.d.; U.S. Fish and Wildlife Service, 2015).

Hawaii was home to a multitude of endangered species. Many of them were forest birds, including the Hawaiian crow (*Corvus hawaiiensis*), which was rare. John Sincock was the first biologist hired by Patuxent for that program. He began studying this and a variety of other species. The Hawaiian research program was difficult to conduct because of the terrain, but the researchers involved made great progress in the conservation of endangered species on the islands (Scott and Kepler, 2016).

Noel Snyder was the first Patuxent biologist to work on the Puerto Rican parrot (*Amazona vittata*) in Puerto Rico. This bird's population was very low—fewer than 20. We worked with this species briefly at Patuxent, after which Region 4 of the U.S. Fish and Wildlife Service and the Commonwealth of Puerto Rico became involved and set up a captive breeding population and facilities in Puerto Rico. They are doing well with them and in 2011 had about 500 birds, either in captivity or in one of two wild populations.

One of the first things that we found to be a limiting factor for the parrot was the curved-bill thrasher (*Margarops fuscatus*). The thrashers would go into the parrot nesting cavities, pierce the eggs, throw them out, and then use the nest site themselves. Dr. James Wiley, Patuxent (Wiley, 2016), presents a more detailed discussion of the Puerto Rican parrot research project.

Patuxent researcher Paul Sykes worked on snail kites (*Rostrhamus sociabilis*) and dusky seaside sparrows (*Ammodramus maritimus nigrescens*) in Florida. Snail kites feed almost exclusively on the apple snail. The kite population is currently (2016) doing well. Unfortunately, the dusky seaside sparrows did not fare as well, and actually became extinct during the period when Paul was working on them.

Paul Sykes is also well known for his studies with other endangered species, including the Kirtland's warbler (*Setophaga kirtlandii*) and the ivory-billed woodpecker (*Campephilus principalis*). A study of the Kirtland's warbler was initiated in 1985 on the bird's wintering grounds in the Bahamas, West Indies, as part of Patuxent's Endangered Wildlife Research Program. On the morning of February 26, Sykes and Paul Sievert captured an adult male Kirtland's warbler in a mist net

Paul Sykes, U.S. Fish and Wildlife Service, with a recently banded Kirtland's warbler, Eleuthera, Bahamas, West Indies, 1985. Photo by Paul Sievert, U.S. Fish and Wildlife Service.

Wolf with collar-mounted transmitter being tracked by David Mech, U.S. Fish and Wildlife Service, in Minnesota. Photo by U.S. Fish and Wildlife Service.

in a patch of low, dense shrub/scrub dominated by buttonsage (*Lantana involucrata*). The site was 1.3 miles north of the town of Governor's Harbour in the middle of the island of Eleuthera. The warbler was uniquely color banded and various morphological data were recorded, but in the excitement it managed to get free before it was photographed. Sykes named the bird "The Governor" for the proximity of its winter territory to Governor's Harbour. The warbler was recaptured at the same locality on February 28 and photographs were taken, including the one shown here, with the warbler being firmly held by Sykes. To the best of our knowledge, this was the first time a live Kirtland's warbler was photographed in the Bahamas, and at that time it was only the second banding of the species in the islands.

Dr. David Mech studied gray wolves (*Canis lupus*) in northern Minnesota and Michigan. Dave was a student at Purdue University when he studied wolves on Isle Royale in Michigan. He became very well known because of his studies, and subsequently was hired by the USFWS as the field biologist to study this population. Dave has been working with these animals since the early 1960s, and continues to work on wolves in that area. He presents major aspects of his studies together with supporting data in the chapter titled "Patuxent's Long-Term Research on Wolves," farther on in this report (Mech, 2016).

References Cited

Mech, L.D., 2016, Patuxent's long-term research on wolves, *in* Perry, M.C., ed., The history of Patuxent—America's wildlife research story: U.S. Geological Survey Circular 1422, p. 197–212. [Also available at https://doi.org/10.3133/cir1422.]

National Black-Footed Ferret Conservation Center, n.d., Black-footed ferret connections at blackfootedferret.org—Captive breeding, accessed June 3, 2016, at http://blackfootedferret.org/captive-breeding/.

Scott, J.M., and Kepler, C.B., 2016, Endangered species research in Hawaii—The early years (1965–87), *in* Perry, M.C., ed., The history of Patuxent—America's wildlife research story: U.S. Geological Survey Circular 1422, p. 183–196. [Also available at https://doi.org/10.3133/cir1422.]

Snyder, N.F.R., 2016, Conserving California condors in the 1980s, *in* Perry, M.C., ed., The history of Patuxent—America's wildlife research story: U.S. Geological Survey Circular 1422, p. 147–156. [Also available at https://doi.org/10.3133/cir1422.]

U.S. Fish and Wildlife Service, 2015, Black-footed ferret—*Mustela nigripes*: U.S. Fish and Wildlife Service fact sheet, Region 6 (Mountain-Prairie Region), accessed June 3, 2016, at https://www.fws.gov/mountain-prairie/factsheets/Black-Footed-Ferret.pdf.

Wiley, J.W., 2016, Endangered species research in the Caribbean, *in* Perry, M.C., ed., The history of Patuxent—America's wildlife research story: U.S. Geological Survey Circular 1422, p. 157–170. [Also available at https://doi.org/10.3133/cir1422.]